

Java on Azure: Building Spring Boot Microservices

Rory Preddy

@rorypreddy

Agenda

- Java at Microsoft
- Microservices?
- Spring Framework
- Azure Spring Cloud

Pivotal





Microsoft Azure Partners for Java









Microsoft Uses Java Heavily

Azure

 Services dependent on Java include Azure Databricks, HDInsight, Spring Cloud, and more.

· LinkedIn

- · 100s of Java microservices in production.
- Over 60+ Java open source projects on GitHub.

Minecraft

- · Hundreds of servers built in Java.
- · Client Java Edition is very popular.

· Yammer

- · Java in the back-end.
- Contributors to Dropwizard Web Framework.

SQL Server

- · Java now embedded out of the box.
- Polybase data visualization and Big Data Clusters interop with Spark, Hadoop connectors.

Android

- Thousands of developers building Android applications at Microsoft.
- New Surface phone based on Android OS.

Azure Services Portfolio



























Key Vault



Active Directory



Service Bus



Event Hub



Event Grid

Azure SDKs and Client Libraries for Java













Data

Storage

Cache

Security





Messaging







Spring on Azure

cloud.spring.io/spring-cloud-azure/



Spring Cloud

App Configuration

Event Hubs

Service Bus

Storage

Redis

Functions



R2DBC

SQL Database

PostgreSQL



Spring Data

SQL Database

MySQL

PostgreSQL

Maria DB

Cosmos DB

- SQL
- MongoDB
- Cassandra
- Gremlin



Spring Security

Active Directory (AAD)

AAD B2C

Microsoft 365

Microsoft Account



Spring Resource

Storage



Service Bus



Spring Cache

Redis Cache



Micrometer

Monitor (includes Log Analytics)

Azure Marketplace Portfolio

Java SE







Java EE















Data















Messaging









DevOps







- Free support for all Java LTS versions
- Available for all environments, cloud and on-premise development machines
- Supported OS: Win, Linux, MacOS
- Supported Platform: Microsoft Azure, Azure Stack, DevOps Server & SQL Server
- Technical preview for non-LTS versions
- Upstream changes pushed to OpenJDK by Azul Systems

Available now, supported until... JUL 2023 MAR 2025 SEP 2026



Available now



Java on Azure - Recap

Free Commercial Support for Java

Provided by Azul System Zulu Enterprise™ OpenJDK distribution

1st-class Java Support

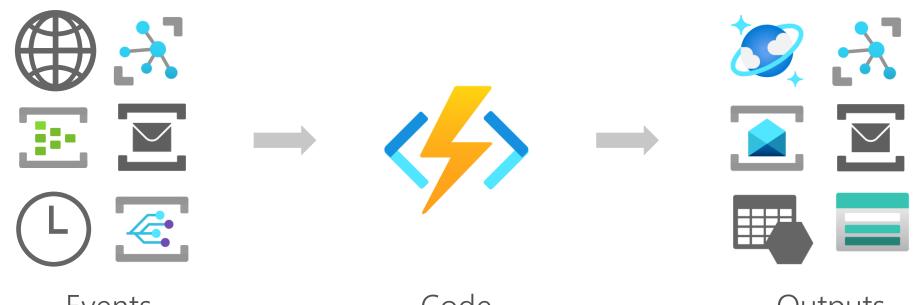
- Azure Spring Cloud
- Azure App Service
- Azure Functions
- Spring on Azure integrations
- Azure Dev Spaces on AKS
- · Azure DevOps
- · Compute services (ACI, AKS, VMs, VMSS, etc.)
- · Integrations with other Azure services (Event Hubs, Service Bus, Cosmos DB, data services, etc.)

1st-class Java Tooling Support

- · Continued growth of Visual Studio Code adoption by Java developers
- · Azure Toolkits (plugins) for Eclipse and IntelliJ IDEA IDEs

Serverless ?= Microservices

Azure Functions: Event driven compute



Events

React to timers, HTTP, or events from your favorite Azure services

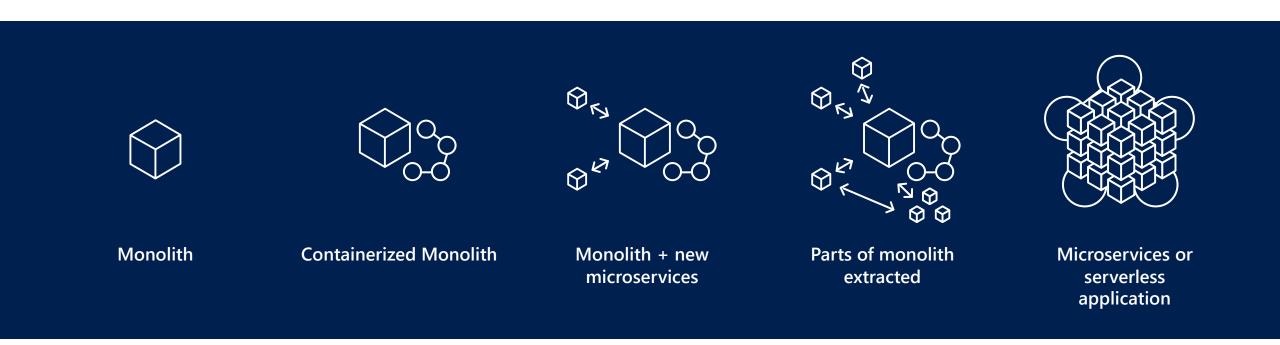
Code

Author functions in C#, JavaScript, TypeScript, Java, Python, PowerShell

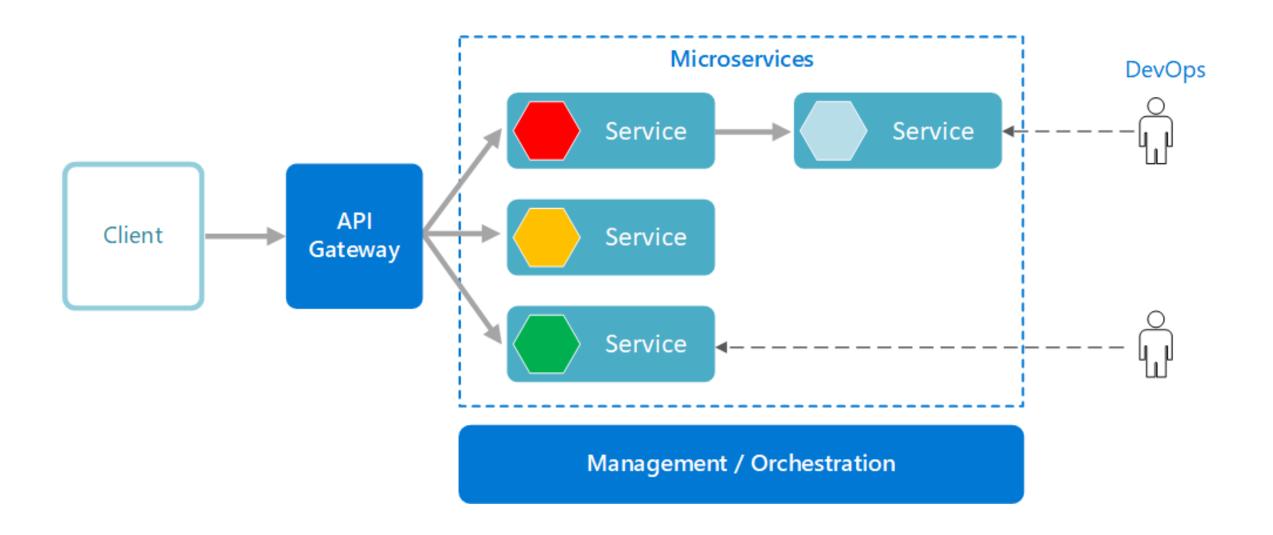
Outputs

Send results to a growing collection of services

So what are Microservices?



Sample microservices architecture



Spring-based Microservices Development



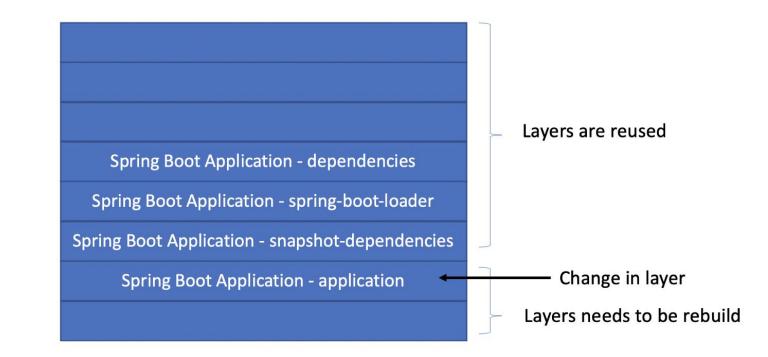


Spring Boot is designed to get you up and running as quickly as possible, with minimal upfront configuration of Spring **Spring Cloud** provides a set of tools that makes communication between microservices easier

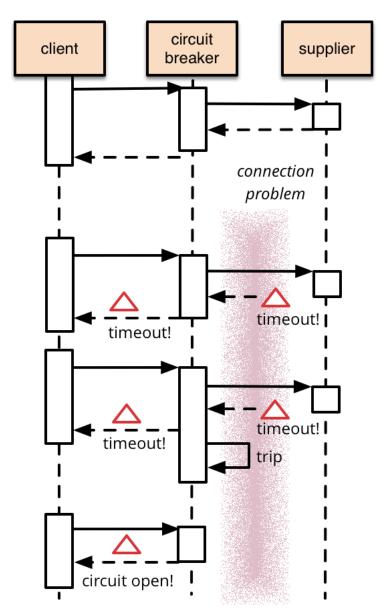
Spring boot docker enhancements

Spring Boot version 2.3 -

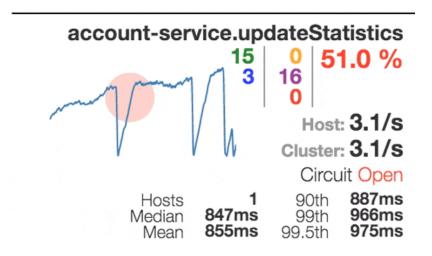
- Cloud Native Buildpacks
- Layered Jars
- Preview on <u>Azure</u>
- Backed by Cloud native foundation + Pivotal



Spring Cloud Circuit breaker pattern



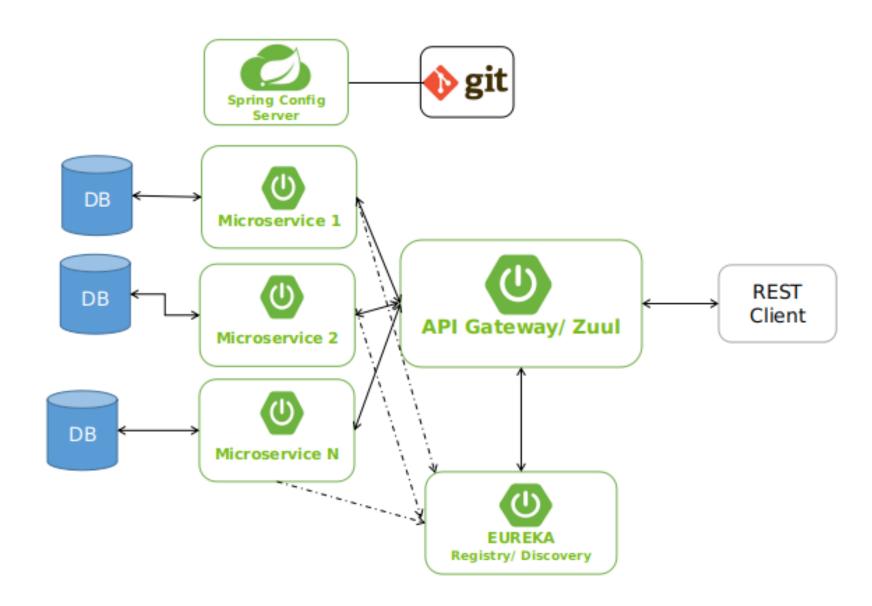
Circuit



Thread Pools

Active 10 Max Active 10 Executions 96 Pool Size 10 Statistics-service Host: 9.6/s Cluster: 9.6/s Cluster: 9.6/s Cluster: 9.6/s Cluster: 9.6/s Queue Size 5

Spring Cloud Netflix

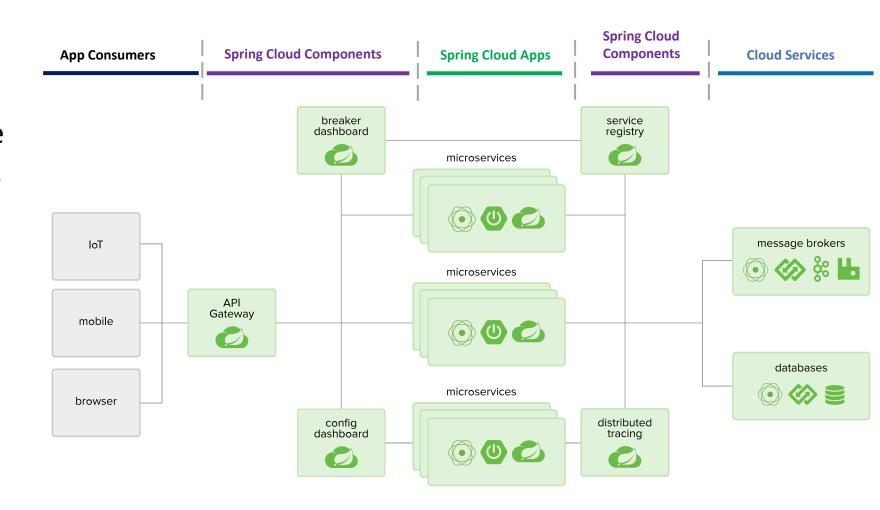


Common Challenges

High effort required to manage cloud infrastructure for Spring boot applications.

Application lifecycle is difficult to manage.

Painful to troubleshoot application issues



Azure Spring Cloud

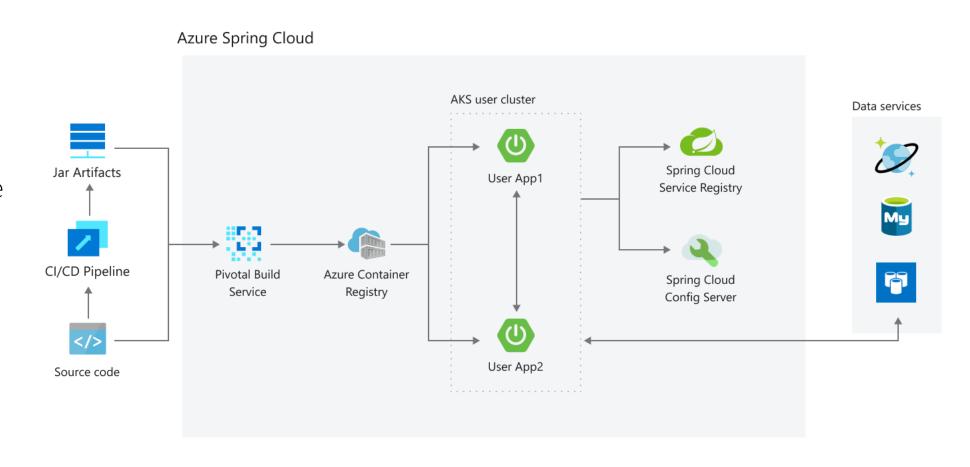
Simple app lifecycle management

Integrated CI/CD pipeline for deployment

Fully managed service

Monitoring and tracing

Scalability and Elasticity



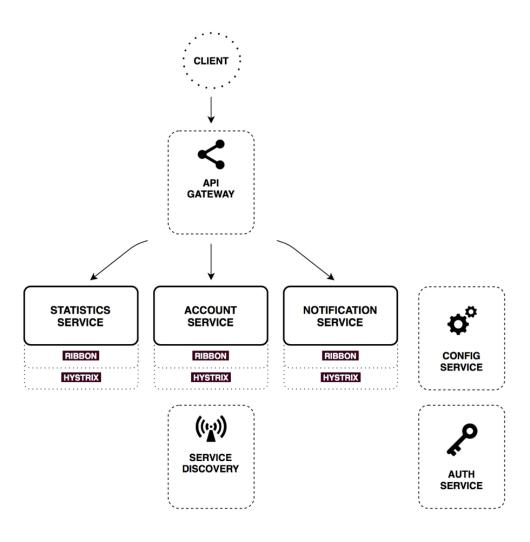
Azure playground: https://azure-spring-cloud.azurewebsites.net

Generate your Spring Cloud application

Microsoft Azure

Θ		
Step 1	Step 2	Step 3
Configure project meta data	Select infrastructure modules	Configure microservice with Azure modules
*Group	*Artifact	
com.example	demo	
*Name	Description	
demo	Demo project for Spring Cloud Azure	
	Next	

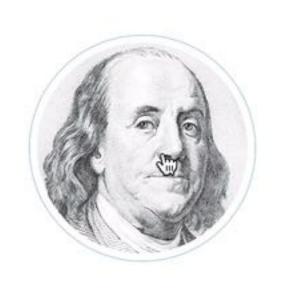
Demo



https://github.com/Azure-Samples/azure-spring-cloud

PIGGY METRICS

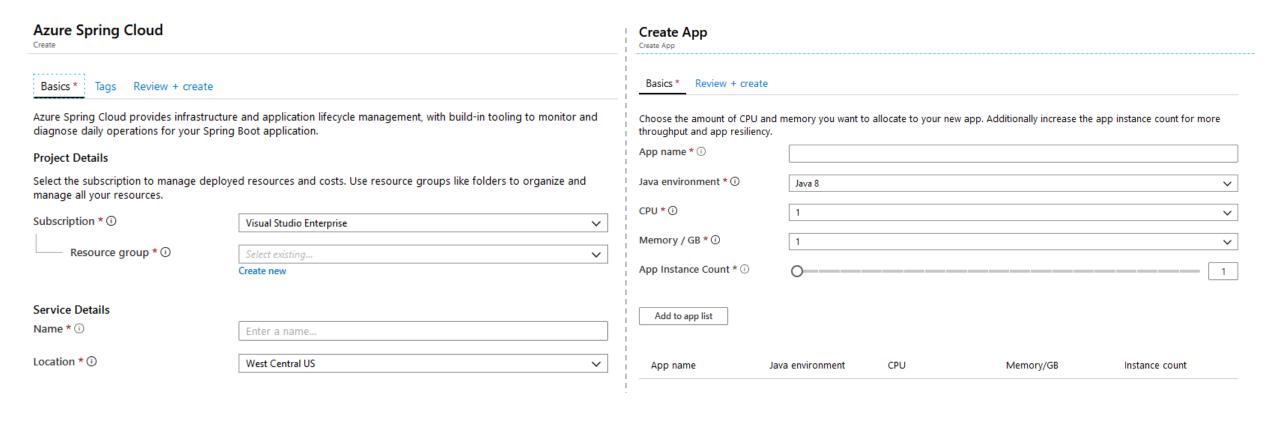
DEMO METRICS



LAST SEEN: 07/04/2015



Create the service app

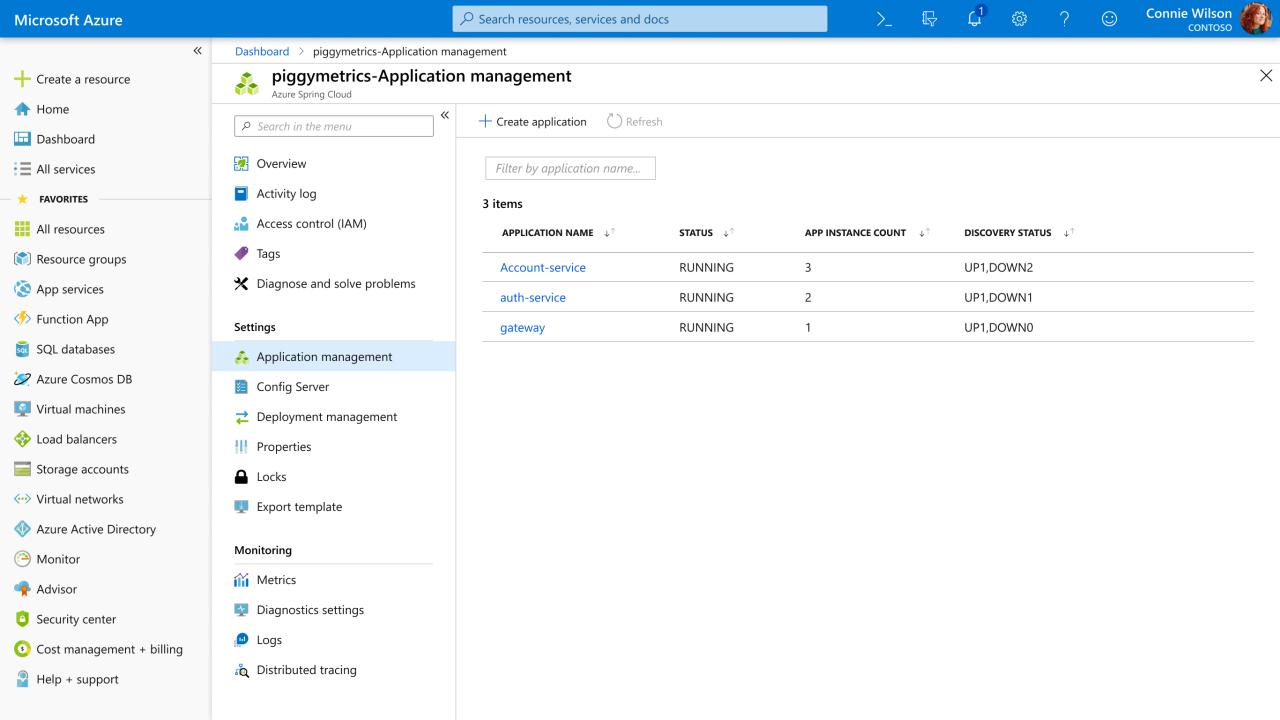


Create service

```
$ az spring-cloud create -n piggymetrics -g demogroup -l westeurope
```

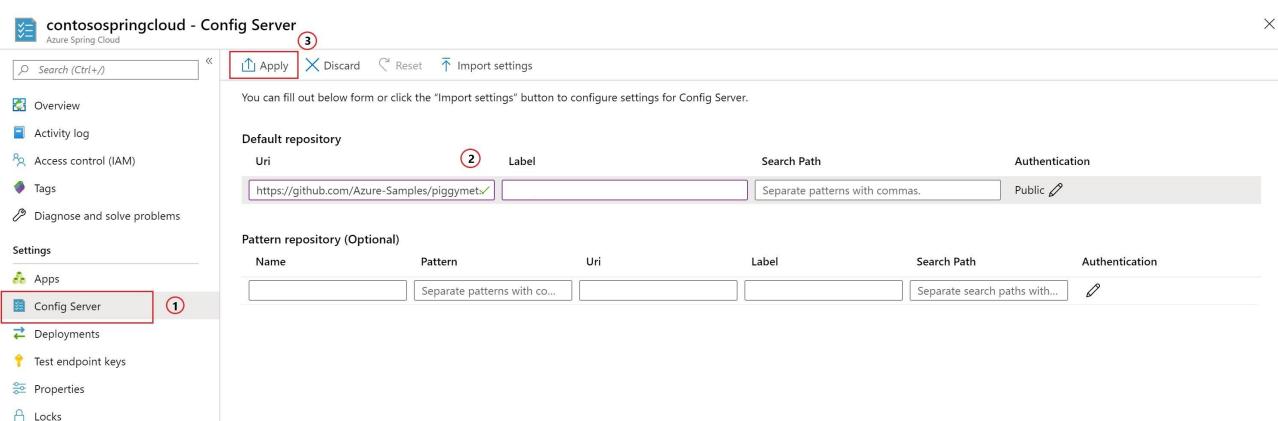
\$ az configure --defaults group=demogroup name=piggymetrics

Create app



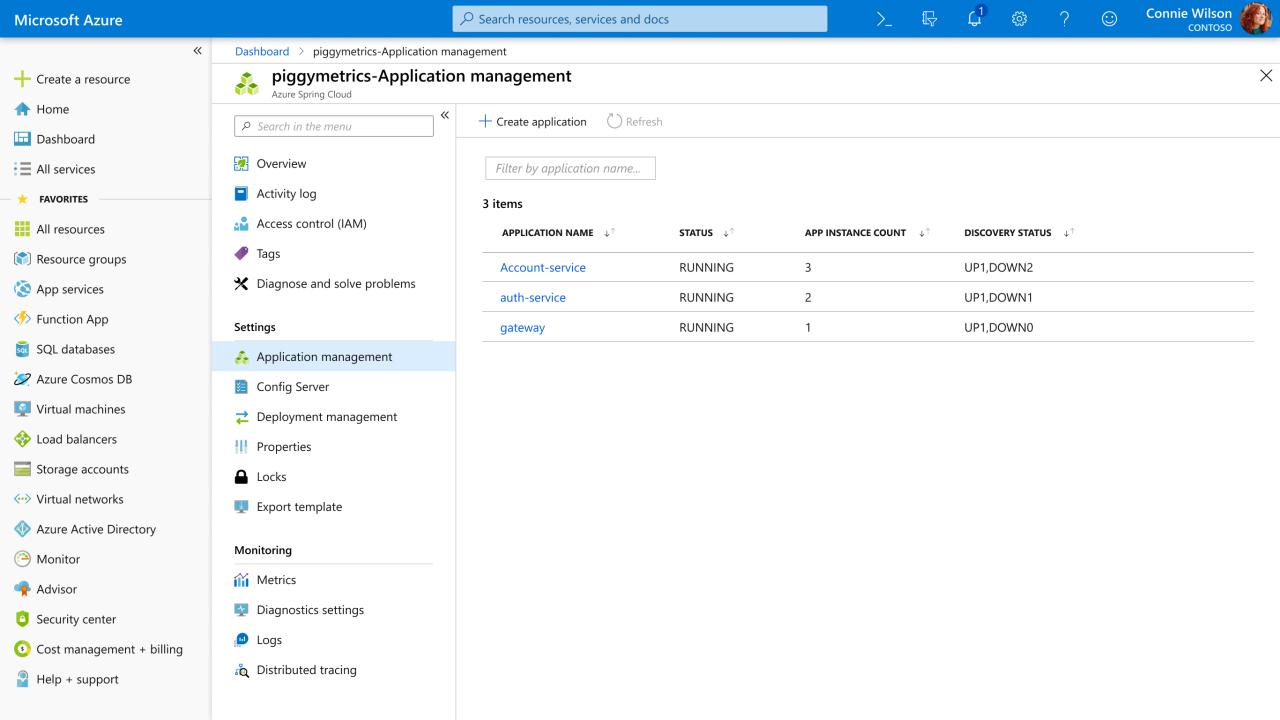
Configure Spring Cloud Config Server

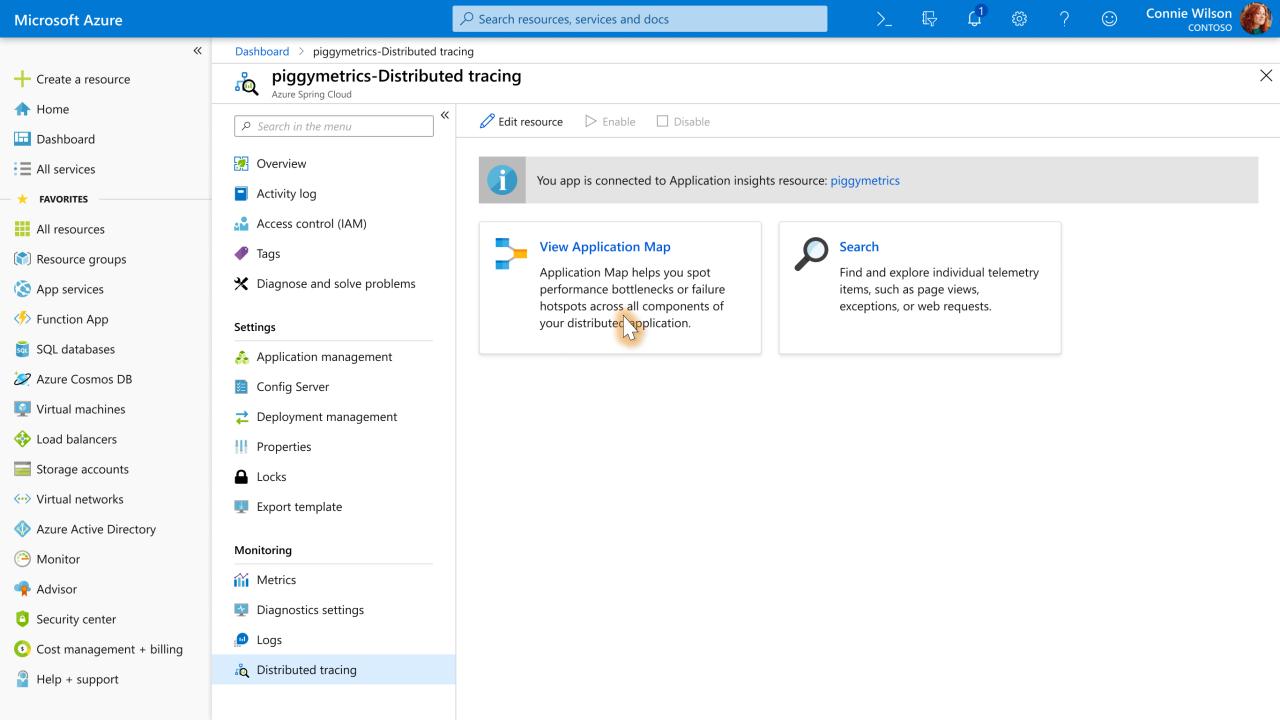
Export template

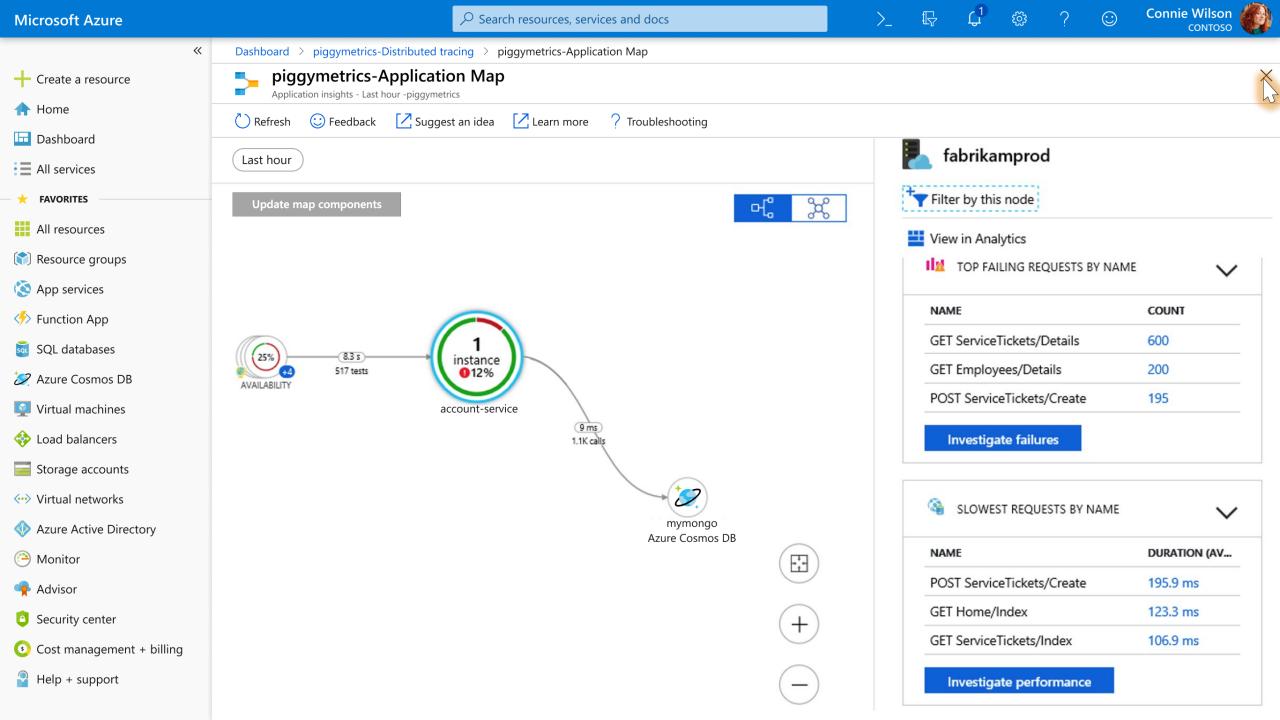


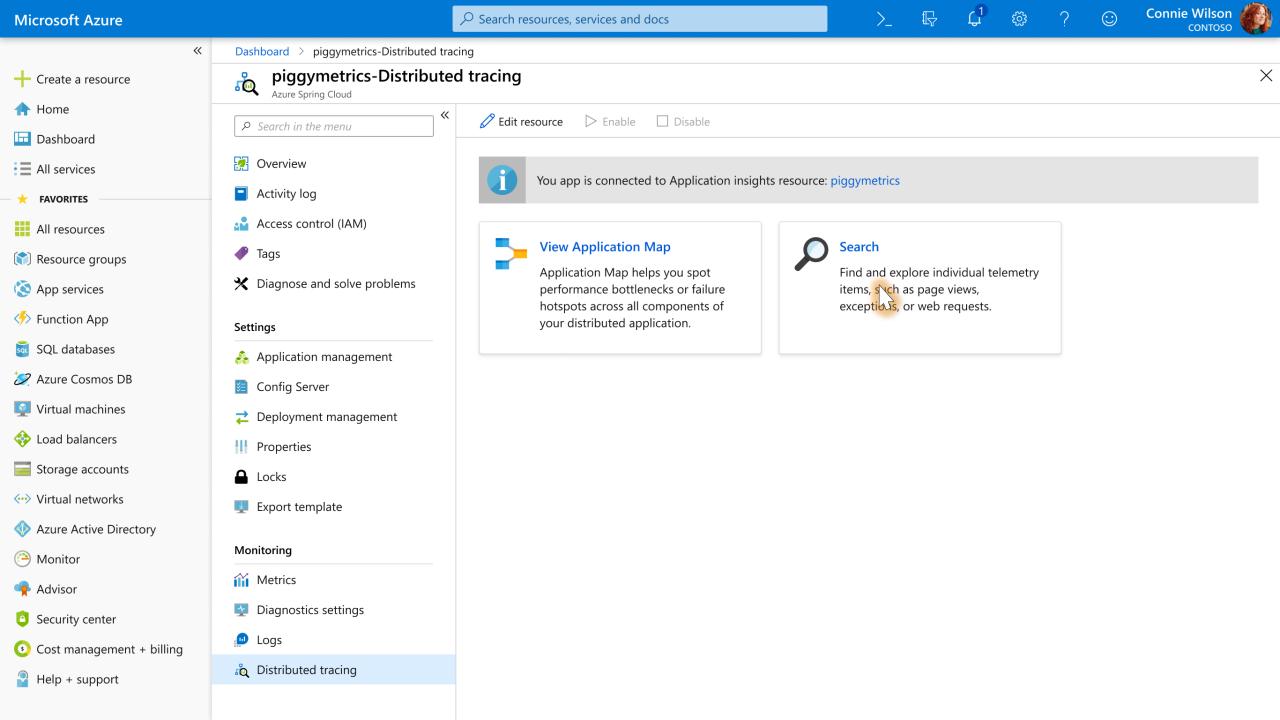
Deploy and Initialize App Via Maven

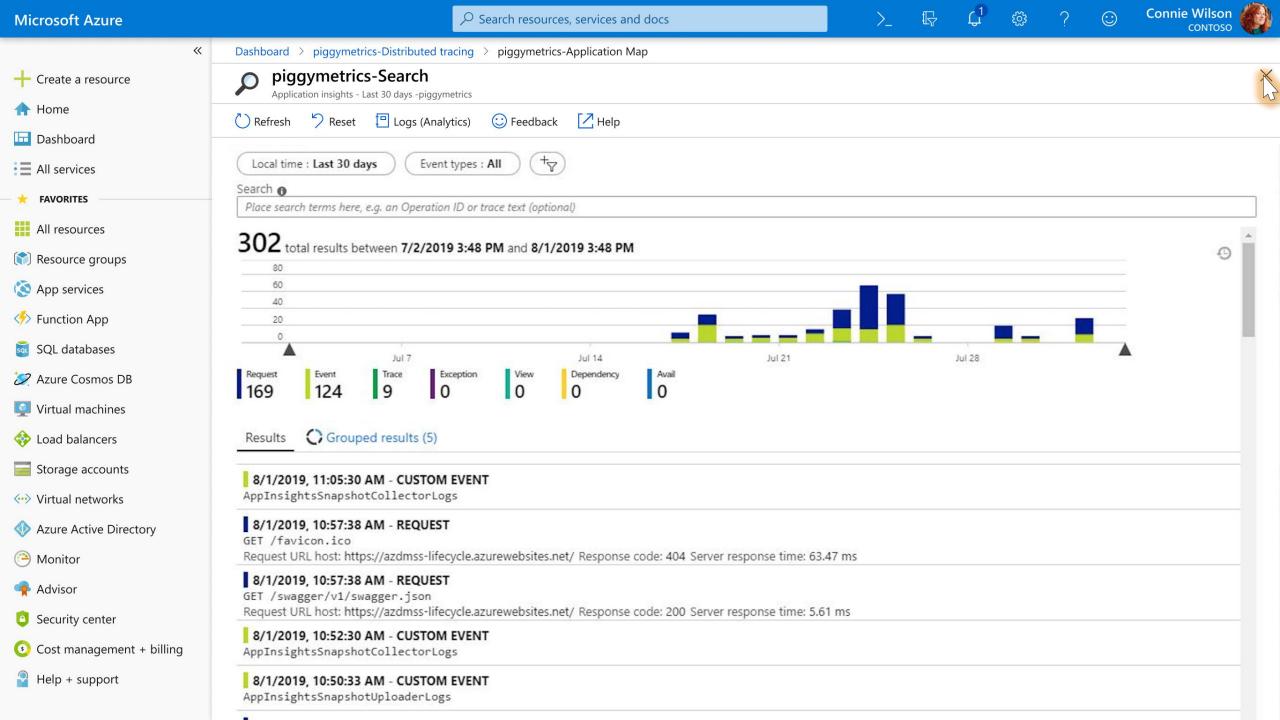
- git clone https://github.com/Azure-Samples/PiggyMetrics
- mvn clean install –DskipTests
- mvn com.microsoft.azure:azure-spring-cloud-mavenplugin:1.1.0:config
- mvn azure-spring-cloud:deploy

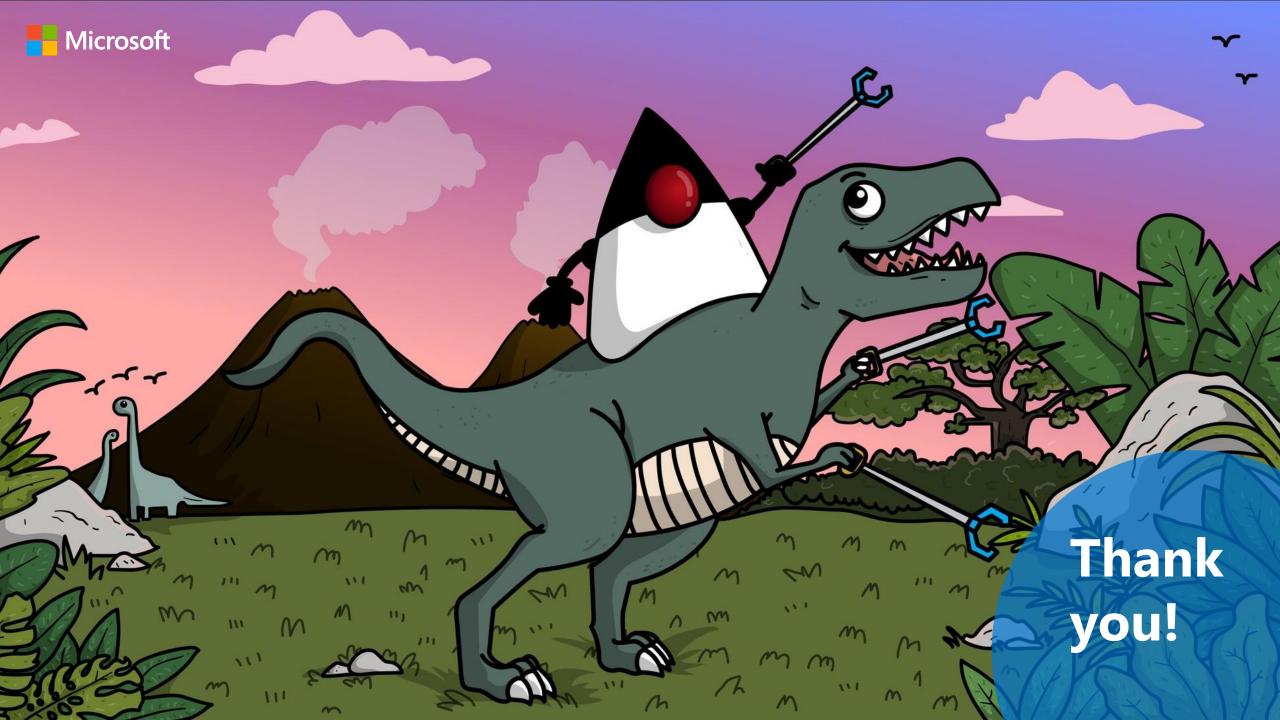
















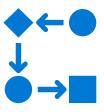
Get access right now.

aka.ms/get-azure-spring-cloud



Check out the documentation.

aka.ms/azure-spring-cloud-docs



Learn with a workshop.

aka.ms/azure-spring-cloud-workshop

Demos

- -Buildpacks
- -Spring Cloud Playground
- -Spring Cloud Netflix
- -Azure Spring Cloud

